



Four Burrows Solar Farm, Penhallow, Cornwall

Archaeological Watching Brief



Historic Environment Projects

Report No

2014R016

Report Name

Four Burrows Solar Farm, Penhallow,
Archaeological Watching Brief

Report Author

Ryan P Smith

Event Type

Watching Brief

Client Organisation

Inazin Ltd

Client Contact

Mr Ian Harding

Monuments (MonUID)

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Fieldwork dates (From) (To)

3 Dec 2012

Feb 2014

(Created By)

Ryan P Smith

(Create Date)

Feb 2014

Location (postal address; or general location and parish)

Land East of Little Lambriggan Farm, Penhallow,
TRURO, Cornwall (Parish of Perranzabuloe)

(Town – for urban sites)

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(Postcode)

TR4 9NG

(Easting) X co-ord

SW 76458

(Northing) Y co-ord

49544

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Institute for Archaeologists

Cover illustration

Looking south west through field 2 at installed solar array and exclusion area 3 in the background.

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Project background

In December 2010, planning permission (PA10/07942) was submitted by Wardell Armstrong International Ltd on behalf of Sunpower Corporation UK Ltd (SunPower) for the construction of a 5MW(p) solar farm covering some 13.1 Ha to be located east of Little Lambriggan Farm, Four Burrows, Penhallow, Cornwall.

An archaeological assessment was produced for the proposed site (Sharpe, A. 2010, *Proposed Four Burrows Solar Farm, Perranzabuloe, Cornwall: archaeological assessment*, HE Projects report 2010R129), this having been incorporated into a Wardell Armstrong International impact assessment for the development proposal. Neither the assessment nor the field survey revealed any archaeological sites within the area proposed for the solar farm, though a scheduled Bronze Age barrow (MCO2297) is located against a hedge in an adjoining field. No geophysical survey had been undertaken within the proposed development at that time.

The development of the site was then reconsidered by Low Carbon Developers (now Inazin Ltd.). As part of the revised application (PA12/02338) the originally proposed site extent was to be enlarged taking in one additional field previously omitted from PA10/07942, due to the presence of a scheduled Bronze Age barrow (MCO2297), thus increasing the size of the original proposal by 3.4Ha to a total of 17.1Ha.

In view of the presence of the scheduled bronze age barrow in the north-eastern corner of the site, the Historic Environment Planning Advice Officer (Dan Ratcliffe, Mid Cornwall), requested that the field within which this barrow is sited be subjected to magnetometer survey to determine the presence or absence of any detectable sub-surface archaeology in its vicinity.

A brief for archaeological recording was issued by the HEPAO, setting out the minimum requirements for archaeological recording at Four Burrows in advance of an application for planning permission for the solar farm, based on the need to assemble the evidence base necessary to identify those heritage assets which would be impacted upon by the development, to identify their significance, and to identify any likely impacts on their settings, whether direct or indirect. Historic Environment Projects, Cornwall Council (HE Projects) was commissioned to undertake a re-assessment of the site, drawing together the results of the 2010 assessment and the geophysical survey of the north-eastern field undertaken in late 2011 by Archaeophysica Ltd (Fig 6) (Roseveare 2012).

The north-eastern field incorporates a scheduled, though truncated, Bronze Age barrow into its south-eastern boundary, whilst NMP aerial photo plots suggested a cropmark feature to its south-west.

The 2011 geophysical survey did not confirm the existence of the cropmark features, though did reveal a series of rather fragmentary linear features, together with a probable barrow defined by a ring ditch adjacent to the field's north-eastern boundary and another possibly similar (though less well defined) feature adjacent to the north-western boundary of the field.

The report included management recommendations to safeguard the northern ring ditch through exclusion from the development area. The other features were judged likely on the basis of the available evidence to be so poorly preserved that it would not be commensurate to exclude them from the development area, though surface mounts were recommended for the arrays to be sited over the other possible barrow. English Heritage provided advice on the size of a suitable buffer between the scheduled monument and the solar farm, and indicated that they would expect the developer to assist in a programme of improvement works to the barrow (Sharpe 2012).

In November 2012 HE Projects were commissioned by Inazin Ltd to undertake a programme of archaeological recording during the installation phase of Four Burrows, Solar Farm Project (the site being centred at SW 76418 49479). This involved site visits to observe the excavation of various foundations, trenches and pits around the site

during the construction phase and to record any archaeological features revealed during their excavation.

The extension to the development project was given consent on the 1st March 2013.

Aims and objectives

As set out in the brief, the aims of the watching brief are to:

- Establish the presence/absence of archaeological remains within the areas to be disturbed
- determine the extent, condition, nature, character, date and significance of any archaeological remains encountered
- establish the nature of the activity on the site
- identify any artefacts relating to the occupation or use of the site
- provide further information on the archaeology of Four Burrows site from any archaeological remains encountered

The objectives are to obtain an archaeological record within areas of the site to be subjected to disturbance and to produce a report summarising the findings of the watching brief.

In relation to the eventual decommissioning of the site Historic Environment would liaise with the client in the production of their method statement to minimise potential ground disturbance. If required, a methodology to undertake suitable recording would be submitted as a separate WSI prior to decommissioning.

Working methods

Desk-based assessment

A desk-based assessment and walk-over survey had previously been carried out and a report compiled (Sharpe 2010).

Fieldwork

The archaeological fieldwork was undertaken as a watching brief, observation of soil stripping operations being carried out under archaeological supervision. The excavators' machines were fitted with various sized buckets, stripping the soil to a level at which archaeological features or layers were likely to be revealed (i.e. the top of the first archaeologically significant horizon or the natural, whichever was highest).

Due to the size of the site and the requirements of the contractor, it was agreed that HE Projects would be notified prior to any excavation being undertaken within these areas of the site, due to time constraints placed on the project. The area designated as field 2 was given higher priority because of the presence of the scheduled monument and the results of the geophysical survey which had provided potential evidence for sub surface archaeological remains within this field (Fig 6).

Exclusion zones around the barrow and its buffer zone, as well as the two additional areas covering the barrows revealed by geophysical survey, were clearly fenced off by the contractor at the beginning of the works. No excavation was to take place within these areas, no vehicles were to track across them, all arrays within the two additional exclusion zones were to be erected on surface mounts rather than piles and cables were to be carried in trays, rather than within trenched ducts.

Location, setting and site history

The Four Burrows solar farm project area occupies a relatively level ridge with a general height of 110m OD, the site comprising five large fields with a largely eastern aspect (Fig 1). The western edge of the site is defined by the A3075 Newquay to Chiverton roundabout road, which runs in a south-west to north-east direction, while the eastern side of the area is defined by a farm track running north east parallel to the fields. The

south-western side of the site slopes gently down into a small valley which continues past Little Lambriggan Farm.

Historic mapping (Figs 3 & 4) provide evidence of the landscape of this area before and following its enclosure from downland. The Historic Landscape Characterisation defines the project area as 'Recently Enclosed Land' (REL) post-medieval, that is land enclosed during the 17th, 18th and 19th centuries, usually from Upland Rough Ground and often medieval commons, generally in relatively high, exposed or poorly drained parts of the county (Fig 4).

The soils on site are well drained fine loams overlying slate or slate rubble.

Identified Archaeological sites

(See Fig 2).

The only archaeological site recorded within the project area is that of a Bronze Age barrow (MCO2297). This is a scheduled monument incorporated into a boundary on the north-eastern edge of the project area, in field 2. A geophysical survey carried out prior to the installation of the solar farm identified two other features identified as potential ploughed out barrows and these were designated as exclusion zones for the purposes of the construction work (Fig 6).

Results

The project area comprises five fields of different size, each has been given a unique identifier number for ease of reference within this report (Fig 5).

On 3rd December 2012, work commenced to excavate a 3m x 3m pit (Fig 6), approximately 1.7m in depth at SW 76617 49461 in preparation for the construction of an electrical sub-station associated with the proposed solar farm. Topsoil was removed using a grading bucket to a depth of no more than 0.3m.

The topsoil was a mid to dark brown clayey loam with frequent stone inclusions, these being a mixture of quartz and mudstone; the stones were irregular and semi-irregular in shape, unsorted and did not exceed 0.02m in size. Directly beneath the topsoil appeared to be a natural subsoil, comprising compact pale yellow and red clays with frequent stone inclusions. Again the stony content was predominantly mudstone, these being semi regular in appearance. This material continued to the base of each of the pits.

No archaeological features were observed nor any finds recovered during the excavation of these features.

Work ceased on site until late September 2013, and site visits resumed in early October to observe works in progress. The piling of the solar array supports had already commenced by this time. In addition, foundation pits had been excavated in fields 3 and 4 to support inverter housings (Fig 8); these pits had already been excavated and filled in with stone prior to HE Projects being notified of their excavation. In total, seven large pits measuring approximately 5m x 3m in size had been excavated, along with several smaller ones nearby; an additional pair of pits had also been excavated in close proximity to the already-established sub-station building. Examination of the spoil heaps around each pit produced no archaeological material.

Discussion with the site manager accompanied by a walkover of the site found that all designated exclusion zones in field 2 had been clearly demarcated with orange safety fence and metal posts, as required by the HEPAO and English Heritage (Figs 6, 12 & 14).

Excavation of trenches began in fields 4 and 5 (Fig 9, 10 & 11), the depth and size of the trenches being dependant on the mechanical excavator being used, (three were in use at any one time); the widths of the trenches ranged from 0.50m to over 1.8m in width and over 1m in depth.

Observation of these works proved difficult at times, as some trenches were left open for a couple of days, whilst others were excavated, ducting and cabling installed, and the trenches backfilled within a matter of hours. This procedure was consistent around the site.

Field 2 was identified as potentially containing the most archaeologically sensitive features, and was monitored more closely once trenching progressed into this area (Fig 6).

Issues were raised in January 2014 after it became apparent that contractors had breached all of the exclusion zones around the designated protected areas and had either utilised them as thoroughfares or as storage areas for the solar panels delivered to the site (Figs 13 & 15). This issue was raised with the site manager and English Heritage was informed of the situation. The site manager re-cordoned off the areas concerned and the contractors were advised not to enter the zones again.

The ground surface in the area adjacent to the scheduled monument (Figs 12 & 13) was found to have been badly damaged by vehicles tracking through the area due to the heavy rain experienced over the past several months (Fig 16). As a result the topsoil had been pushed aside, allowing the underlying subsoil and bedrock to take the brunt of the vehicles' weight. Further archaeological investigation will be required by English Heritage to determine the nature and degree of any damage to subsurface features associated with the Scheduled barrow, as well as the degree of damage which might have taken place to the truncated barrows within the other exclusion zones.

In February 2014, a site visit to inspect the results of the final stage trenching revealed that the contractors had entered the area designated as exclusion area 2, where geophysical survey had identified the potential for buried archaeology (Fig 6) within field 2. Three areas had been dug and some trenching had taken place, but due to the weather conditions and the state of the site, the extent of the resulting damage to archaeology within this area could not be quantified.

Outside the designated exclusion areas, no features of archaeological significance appear to have been disturbed during the installation of the solar farm components. A single piece of flint core was recovered from the ground surface in the north-west corner of field 2, but no other artefacts were retrieved.

It is concluded that the trenched elements of the development did not, therefore, have any discernible impact on the archaeology of the area, although due to the ground conditions within the site during the period of the watching brief, the conditions for observation were not ideal as a result of almost continuous inclement weather and the effects of large machines traversing the fields. The scales and natures of any impacts which might have resulted from the piling operations could not be observed.

No additional features of archaeological significance were identified during the project.

References

Primary sources

Ordnance Survey, c1877, 25 Inch Map First Edition (licensed digital copy at HE)
Ordnance Survey, c1907, 25 Inch Map Second Edition (licensed digital copy at HE)
Ordnance Survey, 2007, Mastermap Digital Mapping
Tithe and Apportionment, c1840 Parish of Perranzabuloe (licensed digital copy at HE)

Published sources

Cornwall Royal Gazette, Falmouth Packet and Plymouth Journal, February 23, 1844: 1)
Brown, M, & Lockyear, A, 2012. *Four Burrows Solar Farm Site Management Plan* (FWAG SouthWest)
Roseveare, MJ & Roseveare, ACK, 2012, *Four Burrows, Cornwall Geophysical Survey Report*
Sharpe, A, 2010. *Proposed Four Burrows solar farm, Perranzabuloe, Cornwall: Archaeological assessment* (Historic Environment Projects, Cornwall Council) for Wardell Armstrong International
Sharpe, A, 2012. *Four Burrows solar farm, Cornwall: Summary report on geophysical survey* (Historic Environment Projects, Cornwall Council)

Web sites

<http://www.heritagegateway.org.uk/gateway/English> Heritage's online database of Sites and Monuments Records, and Listed Buildings
<http://maps.nls.uk/geo/explore> National Library of Scotland Historic Maps
<http://www.bl.uk/onlinegallery/onlineex/ordsurvdraw/> British Library Ordnance Survey Drawings Collection

Project archive

The HE project number is **146219**

The project's documentary, photographic and drawn archive is housed at the offices of Historic Environment, Cornwall Council, Fal Building, County Hall, Treyew Road, Truro, TR1 3AY. The contents of this archive are as listed below:

1. A project file containing site records and notes, project correspondence and administration.
2. Digital photographs stored in the directory ..\Historic Environment (Images)\SITES.E-H\Sites F\FOUR BURROWS\Four Burrows solar farm WB 2012 146219
3. English Heritage/ADS OASIS online reference: cornwall2-171437

This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites F\Four Burrows solar farm watching brief
Artefacts and environmental material retrieved during the project are stored at the HE Projects Finds Archive Store, Cardrew Industrial Estate, Redruth. The site code is FBWB14.

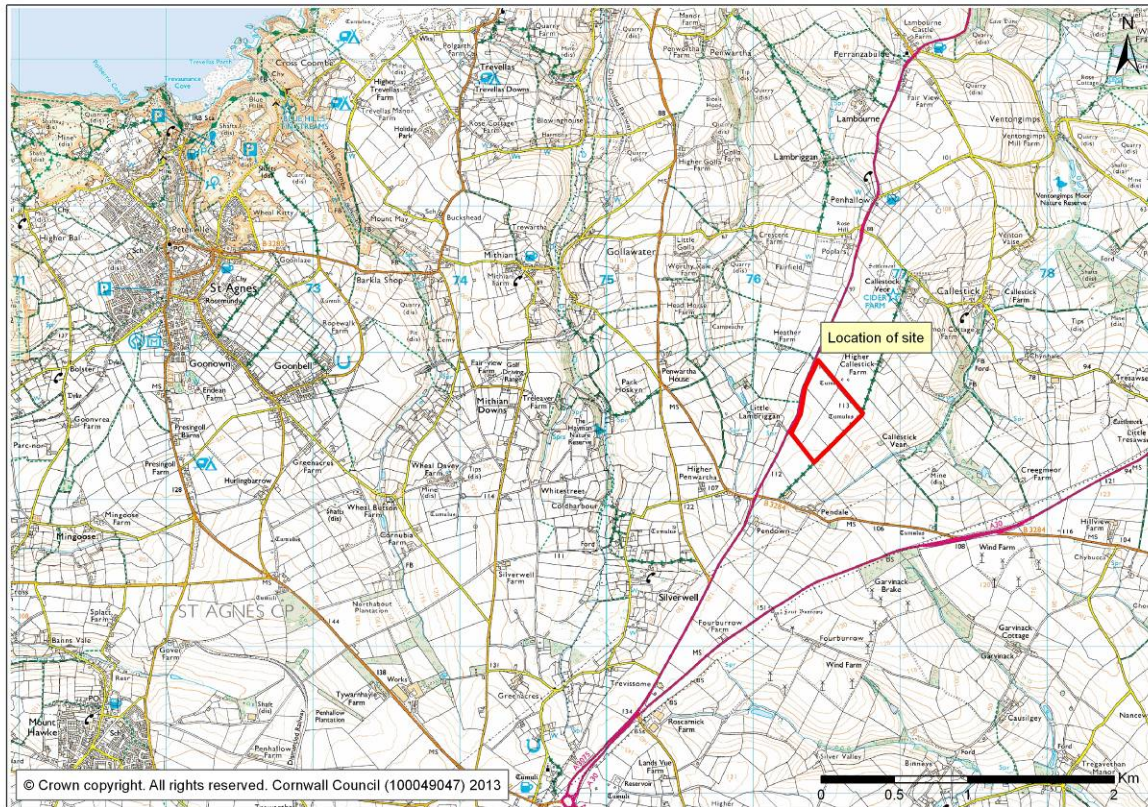


Figure 1: Location and extent of site

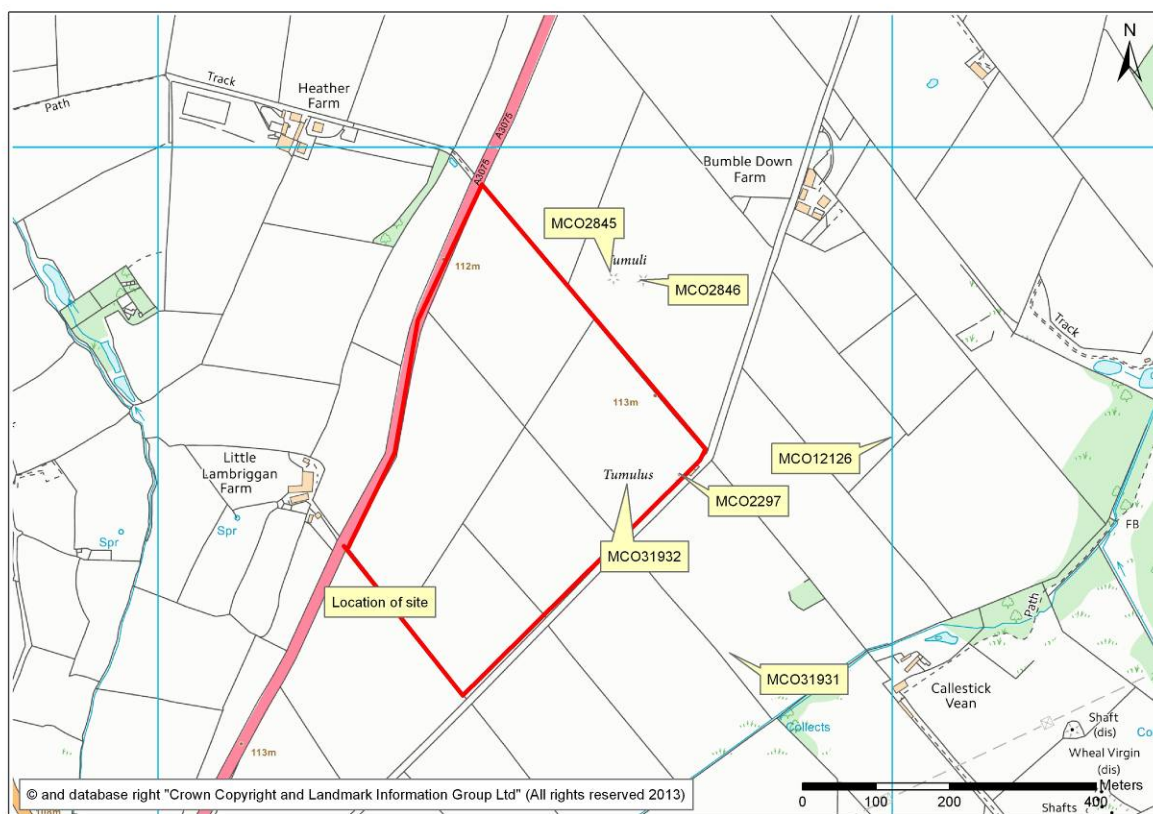


Figure 2: Identified archaeological sites in proximity to the solar farm.

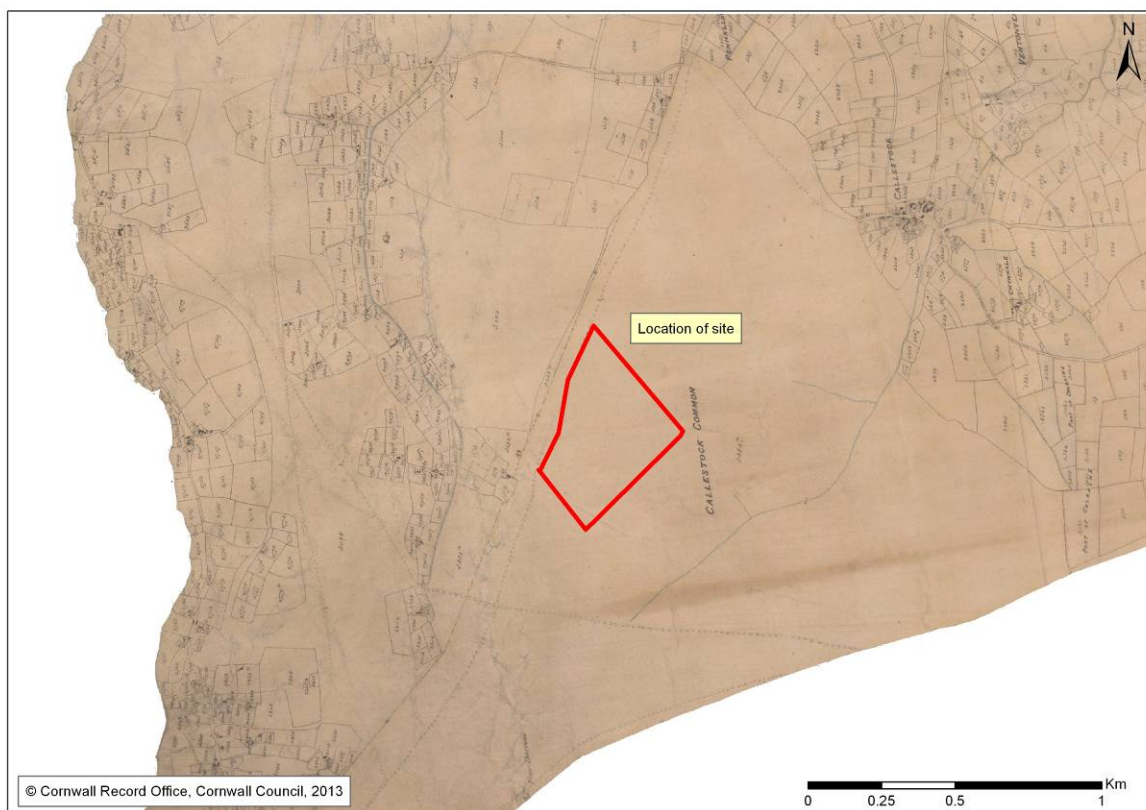


Figure 3: Tithe map of Perranzabuloe Parish (c1840) showing location of site (denoted by red line).

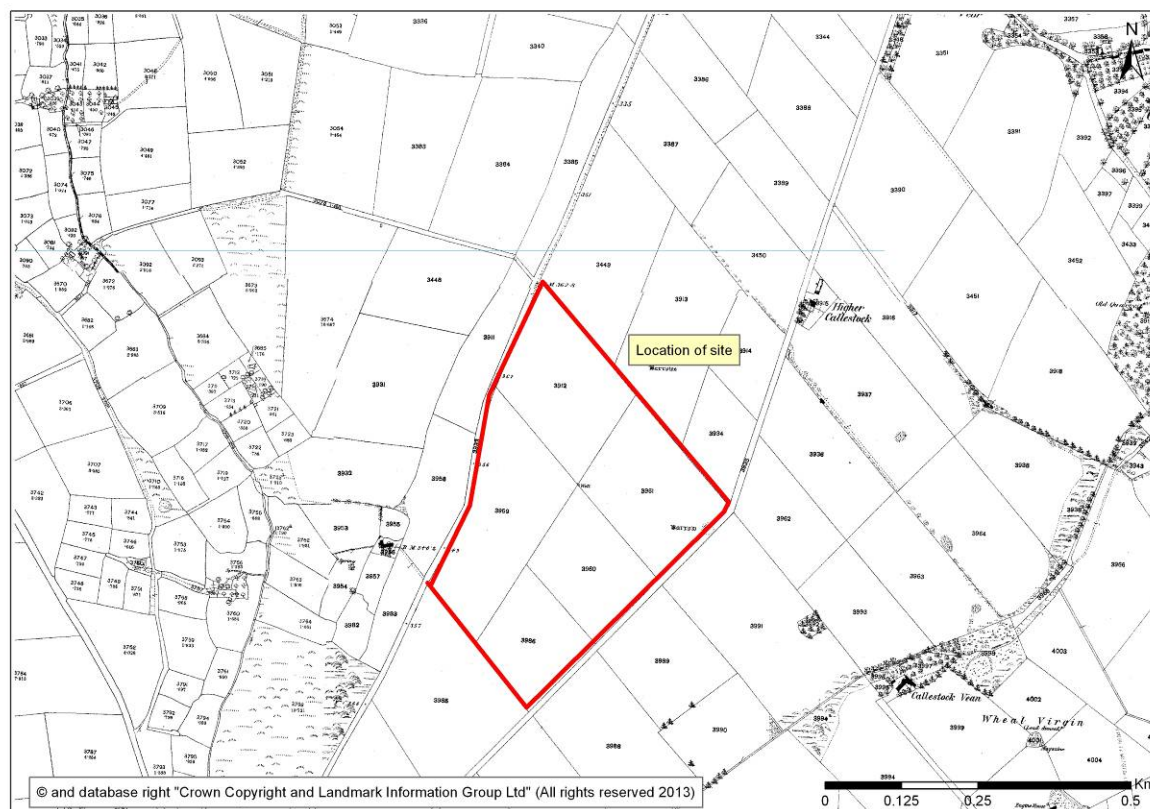


Figure 4: Ordnance Survey c1877 first record of field boundaries.

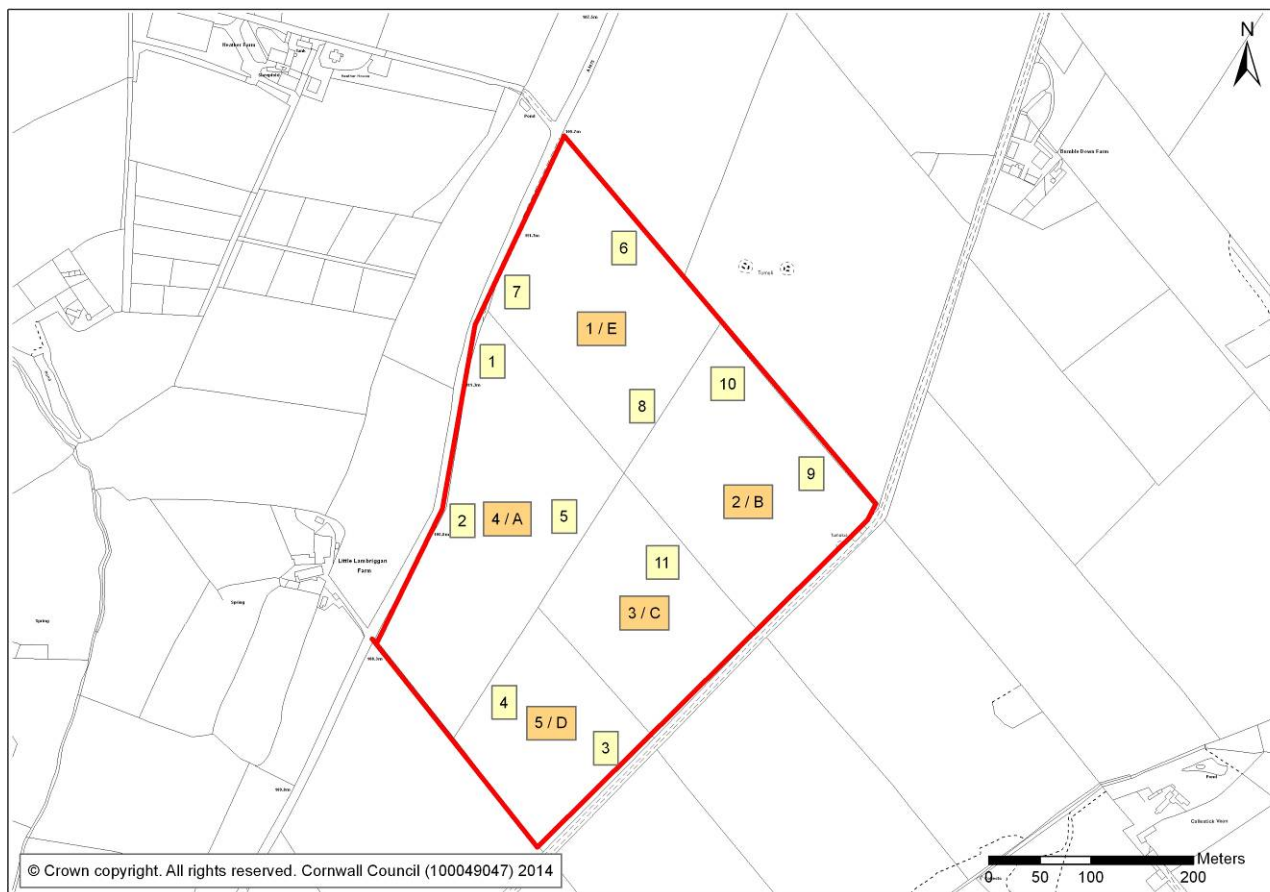


Figure 5: Four Burrows field identification numbers and sample locations.

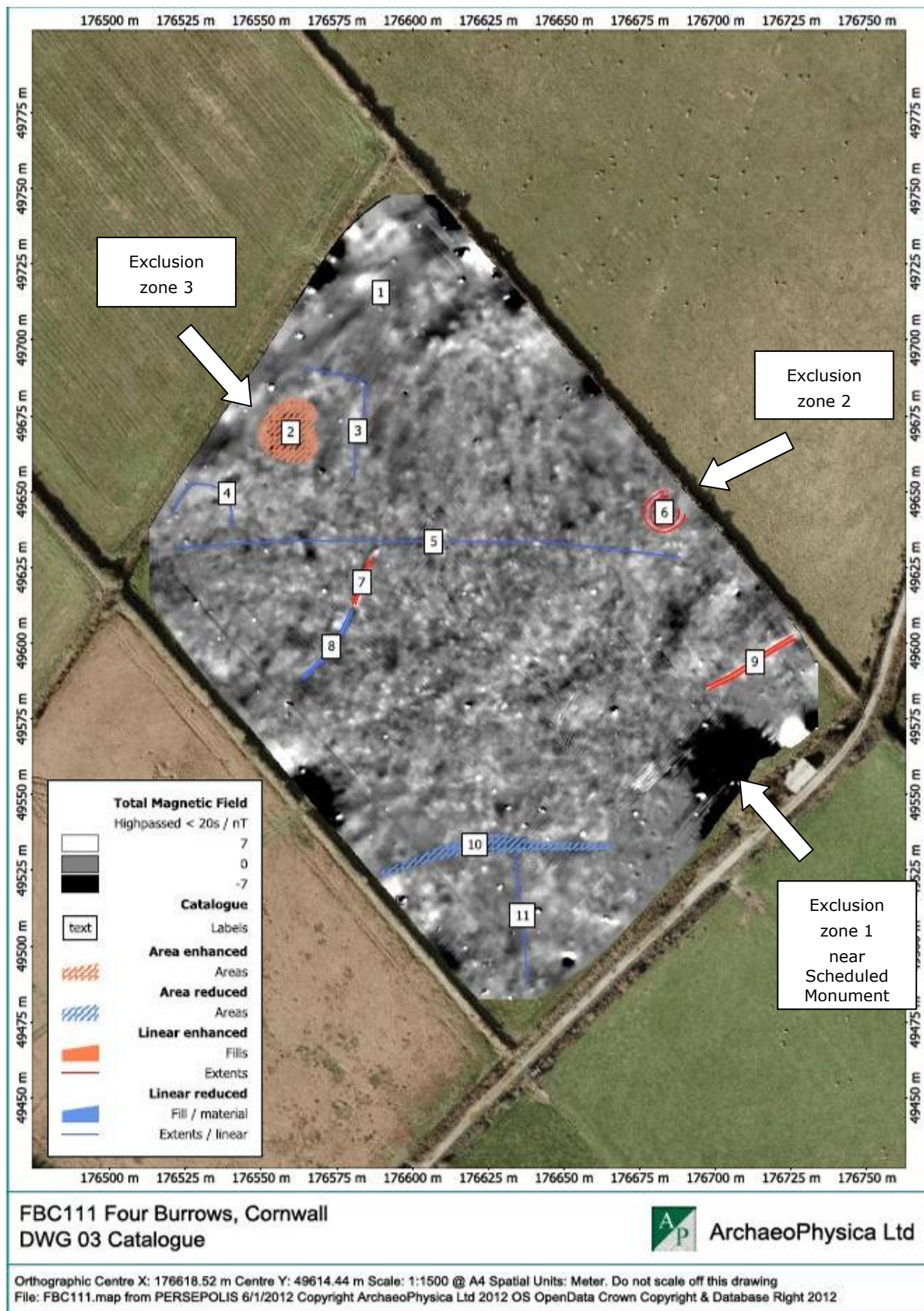


Figure 6: Geophysical survey of field 2 showing designated exclusion zones



Figure 7: Sub-station pit field 3 (looking north)



Figure 8: Inverter pit field 1 (looking north)



Figure 9: Cable trench field 5 looking SW



Figure 10: Cable trench field 4 looking NE toward inverters



Figure 11: Field 2 cabling trench showing change in geology



Figure 12: Scheduled monument MCO2297 (Bronze Age barrow) with exclusion zone fence in situ around Area 1.



Figure 13: Area around scheduled monument (MCO2297) following damage by contractor's vehicles).



Figure 14: Exclusion zone 2 with safety fence in situ (looking east).



Figure 15: Exclusion zone 2 after entry by contractor vehicles (looking W-NW).



Figure 16: Field 2 looking NW along perimeter, orange fence at the rear left of the image is exclusion zone 3, site conditions in some areas were similar if not worse.



Figure 17: Exclusion area 2 looking north (arrows mark area of ducting).

Appendix 1 – Geology of fields

Location	Context	Depth	Description
1 (Field 4)	(101)	0 - <20cm	Topsoil – comprising grey clay material mixed with some loam, frequent stone inclusions being predominantly mudstones with some smaller quartz material, unsorted, irregular shapes <2cm in size, loose.
	(102)	20cm – 70cm (depth of trench)	Reddish/brown layer of clay material with frequent stone inclusions, these being a mixture of mudstone with some quartz, unsorted but larger than upper material, <10cm in width, semi irregular/irregular shapes. Very wet composition, compact material in spoil heap would suggest the contractors had cut some bedrock at the base of the trench in this area.
2 (Field 4)	(101)	0 - <20cm	Topsoil – appears more mid to dark brown in colour than in Field 1, a loamy material with some stone inclusions, the stones being a mix of mudstone and quartz, not as predominant as [Field 1], irregular shapes and sizes, <2cm in size.
	(102)	<20cm – 70cm	Secondary material, predominantly a pinkish red clay, stone inclusions frequent but less so than in [Field 1]. Compact in appearance but water appears to degrade it easily. Evidence of collapse in the section due to heavy rains experienced on site. This area is also the lowest point on the site and forms part of a small valley.
3 (Field 5)	(101)	0 - <20cm	Topsoil – Mid to dark brown in colour with some stone inclusions, these being more sparse than other areas. The topsoil varies in depth, but is reasonably consistent across the field. Stone inclusions consist of quartz and mudstone, the quartz being generally clean and white; irregular shapes and <2cm in size. Unsorted.
	(102)	20cm – 70cm	Subsoil consisting of a pinkish red clay with fewer stone inclusions than observed in [Field 1] and [Field 2]; unsorted, irregular shapes, compact.
4 (Field 5)	(101)	0 - <20cm	Top soil – mid to dark brown in colour, some stone inclusions, sparse, less than <2cm in size, semi-irregular/irregular shapes, predominantly quartz.
	(103)	20cm – 70cm	Pale yellow clay with reddish pink clay banding; contains stone inclusions, mudstones common, compact in appearance, retains water and typical of much of the subsoils seen on the site.
5 (Field 4)	(101)	0 - <20cm	Topsoil – See [Field 4]
	(102)	20cm – 70cm	Pinkish red clay with frequent stone inclusions, banded with pale yellow material. The stones are quartz, irregular in shape and less than 2cm in size.
6 (Field 1)	(101)	0 - <30cm	Topsoil – See [Field 4]
	(102)	<30cm – 1m+	As [Field 5]
7 (Field 1)	(101)	<20cm	TopSoil – See [Field 4]
	(103)	20cm – 35cm	Pale yellow clays with some stone inclusions, mudstones common, compact in appearance, retains water. Stones are semi irregular and variable in size.
	(102)	>35cm	Pinkish/red clays, very compact underlying the pale yellow clays observed across the site.
			Pale yellow and pinkish/red clayey subsoil is found in banded layers across the whole of the site, sometimes horizontally and in other places almost vertically.

8 (Field 1)	(101)	<20cm	Topsoil – See [Field 4]
	(102)	>20cm	Pinkish red clay with common stone inclusions, banded with pale yellow material, stones are quartz, irregular in shape and less than 2cm in size.
9 (Field 2)	(101)	<20cm	Topsoil – See [Field 4]
	(102)		As [7] though within the banded clays was an outcrop of slate, seen only twice in the sections, within field 4 where it was not as distinct and within field 2.
10 (field 2)	(101)	<20cm	Topsoil – [Field 4]
	(102)		As [Field 7].
11 (field 3)	(101)	<20cm	Topsoil - [Field 4]
	(103)		Pale yellow clays with some stone inclusions, mudstones common, compact in appearance, retains water. Stones are semi irregular and varying in sizes.

Appendix 2. Four Burrows solar farm, Penhallow, Truro: Written Scheme of Investigation for archaeological watching brief.

Client: Low Carbon Developers

Client contact: Alex Herbert

Client tel: 01285 380054

Client email: alex.herbert@lowcarbondevelopers.com

Site history

The proposed Four Burrows solar farm is located at OS NGR SW 7648 4958 to the east of the A307 at Little Lambriggan in the civil parish of Perranzabuloe. The site consists of four straight sided agricultural enclosures with a largely easterly aspect and is recorded in the Historic Environment Record as 'Recently Enclosed Land' and as such is likely to have been unenclosed until the 18th or 19th centuries from former downland. The soils on site are described as consisting of well drained fine loams overlying slate or slate rubble.

An archaeological assessment has been produced for this site (Sharpe, A. 2010, *Proposed Four Burrows Solar Farm, Perranzabuloe, Cornwall: archaeological assessment*, HE Projects report 2010R129), this having been incorporated into a Wardell Armstrong International impact assessment for the development proposal. Neither the DBA nor the field survey revealed any archaeological sites within the area proposed for the solar farm, though a scheduled Bronze Age barrow is located against a hedge in an adjoining field. No geophysical survey has been undertaken within the proposed development site.

Project background

A brief has been provided by the HEPAO (Dan Ratcliffe), setting out the minimum requirements for archaeological recording at Little Lambriggan, Penhallow, Truro, Cornwall, TR4 9NG. This work is required to discharge condition 5 of planning application PA10/07942 placed on the development. Archaeological input is also required into work required in fulfilment of conditions 8 and 16.

An archaeological assessment of the site has been carried out (Sharpe 2010). Geophysical survey of the site has not been undertaken.

Planning application PA10/07942 was submitted on the 2nd of December 2010 and was for the 'The development of a 5 MW solar photovoltaic farm on 13.1 Ha of land close to Callestick, near Truro, Cornwall along with attendant equipment and infrastructure'. This application has been approved subject to 16 conditions. Condition 5 states:

"No development shall take place within the site until the applicant has secured and implemented a programme of archaeological work in accordance with a written scheme of investigation to be submitted by the applicant and approved in writing by the LPA."

Condition 8 states

"Prior to the commencement of development a site preparation methodology, construction methodology and decommissioning methodology shall be submitted to and approved in writing by the LPA. The methodology shall include details of ground anchoring, any ground re-profiling works to be undertaken, and any temporary storage compound areas. Development and decommissioning shall be undertaken in accordance with these approved details at all times."

A scheme for decommissioning the development no more than 25 years from the scheme will also be required prior to that decommissioning in pursuance of condition 16. This scheme will need to take into account archaeological considerations. The applicant, their agents and any subcontractors are reminded in the brief that where there are other conditions requiring satisfaction in advance of the commencement of works on site, it is the responsibility of the

applicant to liaise with the planning officer concerned to ensure that the timetabling of these works is managed.

The Historic Environment Planning Advice Officer is Dan Ratcliffe, Historic Environment Advisor (Archaeology), St Austell One Stop Shop, 39 Penwinnick Road, St Austell, PL25 5DR, 01726 223463.

Project extent

The site consists of four adjacent fields at Little Lambriggan. The watching brief will be limited to the archaeological monitoring of those areas which are to be subjected to ground disturbance during the development of the solar farm, including areas disturbed by cable trenching, but excluding activities associated with the installation of ground anchors where buried archaeological remains may be disturbed. The areas to be monitored are likely to include any temporary compound areas or roadways where the topsoil is stripped and areas prepared for the platforms for permanent plant such as inverters and transformers.

Aims and objectives

As set out in the brief, the aims of the watching brief are to:

- Establish the presence/absence of archaeological remains within the areas to be disturbed
- determine the extent, condition, nature, character, date and significance of any archaeological remains encountered
- establish the nature of the activity on the site
- identify any artefacts relating to the occupation or use of the site
- provide further information on the archaeology of Little Lambriggan from any archaeological remains encountered

The objectives are to obtain an archaeological record within areas of the site to be subjected to disturbance.

In addition, Conditions 8 and 16 of the planning consent for the development control the process of decommissioning of the site. Condition 8 requires the production of a methodology for all ground disturbances associated with development and decommissioning of the site, whilst condition 16 is to ensure that a specific written scheme is required immediately prior to decommissioning works.

In relation to this aspect of the project, HE Projects will liaise with the client in the production of their method statement for the decommissioning of the site to minimise potential ground disturbance. If required, a methodology to undertake suitable recording would be submitted as a separate WSI prior to decommissioning.

Working methods

All recording work will be undertaken according to the Institute for Archaeologists *Standards and Guidance for Archaeological Investigation and Recording*. Staff will follow the IfA *Code of Conduct* and *Code of Approved Practice for the Regulation of Contractual Arrangements in Archaeology*. The Institute for Archaeologists is the professional body for archaeologists working in the UK.

Desk-based assessment

A desk-based assessment and walk-over survey have been carried out and reported on (Sharpe, A. 2010, *Proposed Four Burrows Solar Farm, Perranzabuloe, Cornwall: archaeological assessment*, HE Projects report 2010R129).

Fieldwork: watching brief

The site archaeologist will be present during all ground works associated with the development, unless circumstances dictate a different approach. For larger areas, a toothless ditching bucket will be used for the removal of any overburden until the first archaeological horizon is exposed. This will then be hand cleaned as appropriate.

Machines will not run over the stripped area until the archaeological works are complete. The area will then be inspected by an archaeologist and any archaeological features or layers exposed in the stripped area will be carefully excavated by hand and archaeologically recorded by written description, plan and section and photographic record as appropriate by an HE Projects archaeologist.

During the archaeological recording the archaeologist will identify and record any archaeological features that are revealed in the stripped area; the level of recording will be appropriate to the character/importance of the archaeological remains.

If complex and/or significant archaeological deposits are encountered then the archaeological requirements should be reviewed by the client, the Historic Environment Planning Advice Officer and HE Projects. **In the event that remains cannot be preserved *in situ* then full-scale excavation may be required.** A contingency should be allowed to record any significant archaeological remains which are uncovered during the stripping. The significance of the remains should be agreed between the client, the Historic Environment Planning Advice Officer and HE Projects.

An archaeological watching brief will be carried out during the excavation of cable trenches. Where practicable, any features exposed by the trenching activity will be sectioned, recorded and located on a site plan; artefacts will be recovered from the trenching spoil.

Where necessary the detailed archaeological recording may include:

- Excavation of archaeological features exposed in the stripped area and plotting them onto a base map.
- Production of plans and section drawings of the excavated features and recording of features using a continuous numbering system.
- Retrieval of artefacts.

Recording: general

Site drawings (plans, sections, locations of finds) will be made by pencil (4H) on drafting film; all plans will be linked to the Ordnance Survey Landline (electronic) map; all drawings will include standard information: site details, personnel, date, scale, north-point. A site grid and site bench mark (TBM) will be set up and features and finds will be recorded in relation to these. The site grid and TBM will be located relative to the National Grid through measured survey from the nearest OS bench mark at SW 76042 49076.

- All features and finds will be accurately located at an appropriate scale. Sections will normally be drawn at 1:10 and plans at 1:20.
- All archaeological contexts will be described to a standard format linked to a continuous numbering sequence.
- Photography: scaled monochrome photography will be used as the main record medium, with colour digital images used more selectively and for illustrative purposes. This will include both general and site specific photographs. Photographs should have a scale and detailed ones should include a north arrow.
- Drawings and photographs will be recorded in a register giving details of feature number and location.
- Sealed/undisturbed archaeological contexts in the form of buried soils, layers or deposits within significant archaeological features (ditches and pits, etc) will be sampled for environmental evidence and dating material. In the event that significant organic remains are encountered, advice may be needed from Vanessa Straker (Regional Advisor for Archaeological Science). Any necessary environmental sampling will be guided by *Environmental Archaeology* (English Heritage Centre for Archaeological Guidelines. 2001/02).

Treatment of finds

The archaeological fieldwork may produce artefactual material.

- All finds in significant stratified contexts predating 1800 AD (e.g. settlement features) should be collected by context and described. Post medieval or modern finds may be disposed of at the cataloguing stage. This process will be reviewed ahead of its implementation.

- All finds will be collected in sealable plastic bags which will be labelled immediately with the context number or other identifier.

Human remains

Any human remains which are encountered will initially be left in situ and reported to the HEPAO and the appropriate authorities (the Coroner), where appropriate. If removal is necessary this must comply with the relevant Government regulations. If burials are encountered their legal status must be ascertained and recording and/or removal must comply with the legal guidelines. If human remains are not to be removed their physical security will be ensured by back filling as soon as possible after recording. If human remains are to be removed this will be done with due reverence and in accordance to current best practice and legal requirements. The site will be adequately screened from public view. Once excavated, human remains will not be exposed to public view.

Fieldwork: photographic recording

The photographic record shall consist of prints in both black and white and colour together with the negatives. Digital photography will be used for report illustration. For both general and specific photographs, a photographic scale shall be included. In the case of detailed photographs it may be appropriate to include a north arrow. The photographic record shall be accompanied by a photographic register detailing as a minimum, feature number, location and direction of shot.

The photo record will comprise:

- general views
- examples of significant detail

Methodology for the archive standard photography is set out as follows:

- Photographs of details will be taken with lenses of appropriate focal length
- A tripod will be used to take advantage of natural light and slower exposures
- Difficulties of back-lighting will be dealt with where necessary by balancing the lighting by the use of flash
- A metric scale will be included in all views, except where health and safety considerations make this impractical

Archiving

Following review with the HE Project Manager the results from the fieldwork will be collated as an archive in accordance with: *Management of Research Projects in the Historic Environment (MoRPHE) English Heritage 2006* upon completion of the project.

This will involve washing and cataloguing of finds, the indexing and cross-referencing of photographs, drawings and context records.

All finds, etc will be stored in a proper manner (being clearly labelled and marked and stored according to HE guidelines). All finds work will be to accepted professional standards and will adhere to the Institute for Archaeologists *Guidelines for Finds Work*.

All records (context sheets, photographs, etc) will be ordered, catalogued and stored in an appropriate manner (according to HE guidelines).

The site archive and finds will initially be stored at HE premises. The archive including a copy of the written report shall be deposited with the Royal Cornwall Museum within two months of the completion of the full report and confirmed in writing with the HEPAO. The RCM will be notified of the commencement of the project and included in discussions for sampling and disposal as appropriate.

The full report including all specialist assessments of artefact assemblages shall be submitted within a length of time (but not exceeding six months) to be agreed between the applicant and the archaeological contractor, Cornwall Council Historic Environment Service and the Royal Cornwall Museum. A further digital copy shall be supplied on CD-ROM preferably in 'Adobe Acrobat' PDF format. This report will be held by the Cornwall and Scilly Historic Environment Record (HER) and made available for public consultation. A copy of the report

will be supplied to the National Monuments Record (NMR) in Swindon, to the Courtney Library of the Royal Cornwall Museum and to the Cornish Studies Library.

In the event that there are no finds or they are retained by the owner, the documentary archive in due course shall be deposited with the Cornwall Record Office, but in the medium term will be stored at ReStore. All digital records will be filed on the Cornwall Council network.

Archive report

The results from the fieldwork will be presented in a concise report. Copies of the report will be distributed to the Client, the Cornwall and Scilly HER and the local and main archaeological record libraries. A PDF copy of the report will be produced.

This will involve:

- producing a descriptive text;
- producing maps and line drawings;
- selecting photographs;
- report design;
- report editing;
- dissemination of the finished report;
- deposition of archive and finds in the Royal Cornwall Museum, Truro.

The report will have the following contents:

- Summary
- Project background
- Aims and objectives
- Methodology
- Location and setting
- Designations
- Site history
- Archaeological results
- Chronology/dating evidence
- Significance
- Mitigation measures
- Conclusions
- References
- Project archive index
- Supporting illustrations: location map, historic maps, plans, elevations/sections, photographs

An English Heritage/ADS online access to the index of archaeological investigations (OASIS) record will be made.

Assessment/analysis / publication

The structural and stratigraphic data and artefactual material will be assessed to establish whether further analyses and reporting is appropriate. The outline of the final report, and the work required to produce it will be determined in an updated project design.

In the event of significant remains being recovered (e.g. prehistoric or medieval artefacts) it may be appropriate to:

- Consult with the Historic Environment Planning Advice Officer over the requirements for assessment, analysis and reporting.
- Liaise with specialists (e.g. artefacts) to arrange for assessment of the potential for further analysis and reporting.
- Arrange for specialist analyses, where appropriate.
- Produce a final report, for example for publication in an academic journal such as *Cornish Archaeology*.

Timetable

The study is anticipated to be commenced during winter 2011. HE will require at least three weeks notice before commencement of work, in order to allow time to allocate field staff time and arrange other logistics.

The archive report will be completed within 3 months of the end of the fieldwork. The deposition of the archive will be completed within 3 months of the completion of the archive report.

Monitoring and Signing Off Condition

Monitoring of the project will be carried out by Dan Ratcliffe, Historic Environment Planning Advice Officer. The HEPAO will be regularly kept informed of progress. Notification of the start of work shall be given in writing to the HEPAO at least one week in advance of its commencement. Any variations to the WSI shall be agreed with the HEPAO, preferably in writing, prior to them being carried out.

Monitoring points during the study will include:

- Approval of the WSI
- Completion of fieldwork
- Completion of archive report
- Deposition of the archive

Where the Historic Environment Planning Advice Officer is satisfied with the archive report and the deposition of the archive written discharge of the planning condition will be expected from the local planning authority (LPA).

Historic Environment Projects

Historic Environment Projects is the contracting arm of Historic Environment, Cornwall Council (HE). HE employs some 20 project staff with a broad range of expertise, undertaking around 80 projects each year.

HE is committed to conserving and enhancing the distinctiveness of the historic environment and heritage of Cornwall and the Isles of Scilly by providing clients with a number of services including:

- Conservation works to sites and monuments
- Conservation surveys and management plans
- Historic landscape characterisation
- Town surveys for conservation and regeneration
- Historic building surveys and analysis
- Maritime and coastal zone assessments
- Air photo mapping
- Excavations and watching briefs
- Assessments and evaluations
- Post-excavation analysis and publication
- Outreach: exhibitions, publication, presentations

Standards

HE is a Registered Organisation with the Institute for Archaeologists and follows their Standards and Code of Conduct. As part of Cornwall Council, HE has certification in BS9001 (Quality Management), BS14001 (Environmental Management), OHSAS18001 (Health, Safety and Welfare), Investors in People and Charter Mark.

Terms and conditions

Contract

The HE projects team is part of Historic Environment, Cornwall Council. If accepted, the contract for this work will be between the client and Cornwall Council.

The views and recommendations expressed will be those of the HE projects team and will be presented in good faith on the basis of professional judgement and on information currently available.

Project staff

An experienced archaeologist employed by HE will carry out the archaeological fieldwork.

The report will be compiled by experienced archaeologist(s) employed by HE.

Relevant experienced and qualified specialists will be employed to undertake appropriate tasks during the assessment and analysis stages of the project.

The project will be managed by a nominated Senior Archaeologist who will:

- Discuss and agree the detailed objectives and programme of each stage of the project with the client and the field officers, including arrangements for health and safety.
- Monitor progress and results for each stage.
- Edit the project report.
- Liaise with the client regarding the budget and related issues.

Work will be carried out by HE field staff, with assistance from qualified specialists and sub-contractors where appropriate.

Report distribution

Paper copies of the report will be distributed to the client, to local archives and national archaeological record centres.

A digital copy of the report, illustrations and any other files will be held in the Cornwall HER and also supplied to the client on CD or other suitable media.

Copyright

Copyright of all material gathered as a result of the project will be reserved to the Historic Environment, Cornwall Council. Existing copyrights of external sources will be acknowledged where required.

Use of the material will be granted to the client.

Freedom of Information Act

As Cornwall Council is a public authority it is subject to the terms of the Freedom of Information Act 2000, which came into effect from 1st January 2005.

HE will ensure that all information arising from the project shall be held in strict confidence to the extent permitted under the Act. However, the Act permits information to be released under a public right of access (a "Request"). If such a Request is received HE may need to disclose any information it holds, unless it is excluded from disclosure under the Act.

Health and safety statement

HE follows the Council's *Statement of Safety Policy*. For more specific policy and guidelines HE uses the manual *Health and Safety in Field Archaeology* (2002) endorsed by the Standing Conference of Archaeological Unit Managers.

Prior to carrying out on-site work HE will carry out a Risk Assessment.

Insurance

As part of Cornwall Council, HE is covered by Public and Employers Liability Insurance.

Standards

The HE follows the Institute for Archaeologists' Standards and Code of Conduct and is a Registered Archaeological Organization.

As part of Environment, Planning and Economy Directorate of Cornwall Council, the HE projects team has certification in BS9001 (Quality Management), BS14001 (Environmental Management), OHSAS18001 (Health, Safety and Welfare), Investors in People and Charter Mark.

Notes

- It is assumed that the client will supply the mechanical excavator. The cost is not included in the project estimate.
- The client will be responsible for the Health and Safety arrangements onsite.
- In the event that human remains are uncovered the client will ensure that appropriate screening is put in place.
- The post excavation programme (assessment, analysis and reporting) will need to be reviewed in the light of the fieldwork.

Adam Sharpe BA MIfA

Senior Archaeologist

22/11/2011

Historic Environment Projects

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